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INTRODUCTION

In July 2004, Governor Ernie Fletcher created the Governor's Life Sciences Consortium and charged the members to "prepare a strategic plan for making Kentucky a leader among states and regions of the world in specific areas of the life sciences over the course of the next decade and beyond." The Consortium Board was comprised of diverse professional, entrepreneurial, governmental and academic experts who were given the following responsibilities:

A. Develop a strategic initiative to:
    1) attract life sciences companies and jobs to the Commonwealth;
    2) commercialize our research and determine how Kentucky's research universities, federal and state laboratories, life science incubators, research parks, private industry, and other major resources can be leveraged to help make Kentucky a more attractive location for the life science industry, and how these resources can boost development of the industry through technology transfer and commercialization of new ideas and discoveries;
    3) promote venture capital investment in developing the life sciences industry in Kentucky.
B. Present a draft report to the Governor…
C. Develop on a continuing basis and in a timely manner specific criteria for conducting a focused inquiry and evaluation of specific companies and businesses that have demonstrated a serious and legitimate interest in locating in Kentucky and, through the collaborative efforts of the represented entities of the Board, as well as private sector interests, recommending economic development incentive packages to the Economic Development Cabinet for implementation and recruitment of life science companies to Kentucky.

The following report and recommendations represent the diligent efforts of the Consortium Board to respond to the Governor's charge and to position Kentucky to become a world leader in the life sciences/biosciences arena.

KENTUCKY'S CURRENT POSITION IN THE LIFE SCIENCES

Why does Kentucky need an aggressive economic growth plan for the life sciences?

Kentucky:

1. Ranks 48th of 50 states in Science and Technology, falling from 46th in 2002
2. Biosciences employment is comparatively low, both nationally and regionally
3. Per capita income, a true measure of wealth and prosperity, has remained unchanged for over a decade. Jobs are being attracted, but largely they are commodity jobs and not knowledge-based positions that Kentucky needs to be competitive in the global economy.
4. Falls in the third tier of states in the biopharmaceutical industry, a profitable area included within life sciences

The Problem Expanded:

The Milliken Institute's 2004 National State Technology and Science Overall Index ranks Kentucky as 48th out of the 50 states, actually Kentucky slipping two notches from the 2002 ranking, with its biggest regression in risk capital and entrepreneurial infrastructure.

The Milliken Institute focused on five areas to calculate the scores in the overall index:

1. R&D ranking: Kentucky was 45th, but was up four positions relative to 2002. Kentucky recorded a sizable increase in NSF funding, yet this was only the start to a long "catch-up" process needed to make Kentucky competitive.
2. Risk Capital and Entrepreneurial Assets: Kentucky ranks 48th and fell from 45th in 2002. Kentucky's highest score was in growth in companies receiving VC investment at 30th.
3. Human Capital Capacity: Kentucky was 45th, but improved relative to 2002 in the percent of the population age 25 or above with a bachelor's degree.
4. Technology and Science Workforce: Kentucky, 46th, is next to last in intensity of Life & Physical Scientists.
5. Technology Concentration and Dynamism: ranking not listed for Kentucky in report.

Surrounding State Comparison:

The Milliken Institute National State Science and Technology Index places Kentucky in the Bottom Tier of states in the Science and Technology Index, while TN, IN, and MO are in the third tier and Illinois and Ohio are ranked in the second tier. Virginia is listed in the top ten.

From the 2004 Battelle Report on Life Sciences Clusters:

The Battelle report recognizes four sub sectors in the Biosciences and categorized each state for Employment Size as a share of total U.S. Employment as Large, Sizable, Small, or Undersized:

1. Agricultural Feedstock and Chemicals: Kentucky is listed as Small. Nearby Indiana, Ohio, and Missouri are listed as Sizable; and Illinois, Tennessee, and Virginia are listed as Large.
2. Drugs and Pharmaceuticals: Kentucky is listed as Undersized while bordering Tennessee, Missouri, and Virginia are listed as Small; and Illinois and Indiana are listed as Large in this sub sector.
3. Medical Devices and Equipment: Kentucky is listed as Undersized while neighboring Tennessee and Missouri fall under Small; and Ohio, Indiana, and Illinois all make the Sizable list.
4. Research and Testing: Kentucky, again, is shown as Undersized while surrounding states like Tennessee, Ohio, and Missouri at least make the Small list and bordering Illinois is categorized as Large.

GOVERNOR'S LIFE SCIENCES CONSORTIUM: EXECUTIVE SUMMARY OF RECOMMENDATIONS

Kentucky's economy has historically been fueled by our signature tobacco, bourbon and equine industries. As the Commonwealth has become competitive in attracting and growing automobile manufacturers, Kentucky has become known as a world class manufacturing state. This report outlines a strategy for leveraging current assets and developing new opportunities, to enable Kentucky to emerge as a recognized world leader in the area of the life sciences. The implications of embarking on this endeavor go well beyond the primary potential economic impact, as the Commonwealth pursues new businesses and industries that reflect emerging biological and technological research and advancement. Kentucky is uniquely positioned to be recognized as a state that leads the world in areas that heal and bring life to its citizens.

The Life Sciences industry consists of several different sectors that include: pharmaceutical, nutraceutical, biotechnology, medical devices, bio and health informatics and services related to these respective sectors. For example, just in the area of biotechnology, the industry has mushroomed since 1992, with U.S. revenues increasing from $8 billion in 1992 to $39.2 billion in 2003. Similar such growth patterns are emerging in nearly every other area of the Life Sciences as well. According to a recent survey conducted jointly by the Kentucky Science and Technology Corporation and the Kentucky Life Sciences Organization, there are approximately 200 life science related companies in Kentucky. Kentucky has a minimally established base in the industry, but as a number of national studies indicate, Kentucky is not maximizing its resources.

Kentucky is considered to be an emerging novice state in the life sciences area, particularly with respect to the commercialization of research. Although several national reports on this area have placed Kentucky 48th or 49th position in the nation, a recent article in The Chronicle of Higher Education referenced the impressive gains made by the University of Kentucky and the University of Louisville in attracting federal research funding and potentially patentable inventions. The Life Science/Bioscience Consortium Report identifies areas in the life sciences in which Kentucky has both resources and assets that could be leveraged to significantly improve the Commonwealth's prosperity within this sector. With the proper utilization of existing resources, the development of key new programs, strong leadership within state government and coordinated efforts among all programs and stakeholders, Kentucky has the opportunity to become a world leader in specific niches of the life sciences industry and to develop world-class status in others. However, now is the time for Kentucky to act. The Commonwealth is already facing strong competition from Iowa, South Carolina, North Carolina, Indiana and other states in the vigorous quest to commercialize bioscience research.

The strategic areas of focus (those areas in which world class status will be sought) identified by Governor Fletcher's Life Sciences/Biosciences consortium are:

Natural Products
Medical Devices
Health Technology Services
Niche Pharmaceuticals and Niche Biotechnology

In addition, these areas of focus have the potential to dramatically impact the therapeutic categories of cardiovascular, oncology and neurosciences.

The following descriptions outline the strategic focus areas identified and recommended by the Consortium.

Natural Products
The natural products industry encompasses a portion of the pharmaceutical industry, the biotechnology industry and the entire nutraceutical area including the functional food and ag-biotech industries. If a compound or product is produced in nature by a plant, animal or microorganism, it is considered a natural product. The Consortium has identified Natural Products as an area of focus because of the assets within the state that provide a foundation for this sector. Those assets include: the Kentucky Tobacco Research and Development Center, which conducts unique commercialization research on plant-made pharmaceuticals and other natural-products opportunities for Kentucky agriculture; Large Scale Biology Corporation which has a state of the art manufacturing facility in Owensboro for plant made pharmaceuticals; Alltech, a Kentucky based company in Nicholasville that utilizes biotechnology to produce world renowned animal feeds; and Martek, a company with manufacturing facilities in Winchester that produces docosahexanoic acid (DHA) from marine algae for use in baby formula.

Medical Devices
Medical Devices are devices that are used to enhance patient health. Often times these devices are used in surgical procedures. Examples of medical devices range from catheters to sophisticated electronic devices that are used to enhance patients' health. The Consortium has identified Medical Devices as a strategic area of focus because of the assets within the state that can build on this sector. Those assets include: MedVenture Technologies, a Louisville based company that engineers, designs and manufactures state of the art medical devices; engineering programs at both the University of Kentucky and the University of Louisville that have the potential to develop new medical devices; the Cardiovascular Innovation Institute partnership between the University of Louisville and Jewish Hospital; and the close proximity to United Parcel Service, which allows for the efficient and rapid delivery of time sensitive medical devices.

Health Technology Services
Health Technology Services is an area of the life sciences that includes bioinformatics, biologistics, diagnostics and other services involving the application of technology to life sciences. The Consortium has identified Health Technology Services as a strategic area of focus because of related assets within the state that can enhance this sector. Those assets include: Advanced Imaging Concepts (AIC), which is a company that digitizes computer records; Humana, a major health care company that has spun out multiple new companies that utilize technology to provide services in the life sciences area; and the close proximity of United Parcel Service which can provide significant opportunities in the area of biologistics.

Niche Pharma and Niche Biotechnology
Niche Pharma and Niche Biotechnology involve areas of the pharma and biotech industry that do not involve big pharma and big bio. These areas include specialty pharma, formulation work, and niche manufacturing. The Consortium has identified Niche Pharma and Niche Biotechnology as a strategic area of focus because of the assets within the state that can build on this sector. Those assets include: The Center for Pharmaceutical Science and Technology at the

University of Kentucky that will be applying advanced manufacturing concepts to meet current good manufacturing practices (cGMP) for production of niche products; a prestigious School of Pharmacy at the University of Kentucky that is ranked 3rd in the nation and has considerable expertise in formulation work; and companies such as Xanodyne and Pediamed that are specialty pharmaceutical companies.

Further explanations of these areas will be discussed in the report. It should be noted that these areas of focus should not be used to exclude programs or opportunities that are later identified to have potential value within the Commonwealth. Rather, these should be considered as areas to target because they represent existing expertise and initiatives that have the potential to help spawn economic growth and development in Kentucky.

There are four key ingredients required to successfully compete and excel in the life sciences industry. These ingredients are:

- Research
- Commercialization Capital
- Business Talent
- Infrastructure

Kentucky has made great improvements over the past several years in increasing the Research and Development dollars that are coming into the University system from state and federal sources. Those efforts are proving successful and should continue to receive support. The infrastructure ingredient is required for both supporting the increased R&D and supporting commercialization.

The final two ingredients are aimed at commercialization, which is, turning research into profitable companies. Kentucky lacks life sciences venture capital and life science business talent. Significant improvements have been made in life sciences infrastructure over the past five years; however, substantial improvements still must be made to ensure that Kentucky can develop appropriate niche markets.

Recommendations

The following are proposed recommendations that would significantly improve Kentucky's potential for commercializing new life science technologies:

Establish a venture fund dedicated to Life Sciences.

Establish or explore the designation of existing "Seed Funds" targeted for *early stage* investing in Life Science start-ups.

Establish a program to develop, attract and retain experienced life science managerial talent in Kentucky.

Fund and provide strategic direction for an expedited assessment of both public and private infrastructure that currently exists and that will be needed over the next decade, in order to grow Kentucky's Life Science industry base (e.g. research parks, incubators, laboratory facilities and intellectual capital).

Enhance the current statewide commercialization program under the direction of the Department of Commercialization and Innovation (DCI) to more adequately address the Life Sciences disciplines.

Review and modify regulations, policies and procedures governing the Kentucky Natural Products Fund and the Commercialization Investment Fund to assure they are market competitive, effective, commercially viable investment funds.

Designate the Commissioner of DCI as the state government leadership position responsible for life sciences business attraction and retention in partnership with the Governor's Senior Policy Advisor for Postsecondary Economic Development Initiatives, the Council on Postsecondary Education (CPE) and the life sciences experts within the universities.

Create economic development incentives that are attractive to Life Science companies – for established companies as well as prospective start-ups or early stage companies.

Provide sustained support for K through 12 education, Workforce Development education (K through 12, postsecondary education), KCTCS and other institutions to develop the Life Science Workforce.

Provide sustained financial support to Kentucky research and innovation programs that are at the interface of research and commercialization.

Establish an advisory group to assist the Commissioner of DCI in the implementation of the Life Sciences/Biosciences Consortium recommendations.

RECOMMENDATIONS TO GOVERNOR ERNIE FLETCHER FROM THE GOVERNOR'S LIFE SCIENCES/BIOSCIENCES CONSORTIUM

The following are specific strategies for the implementation of some of the recommendations approved by the Governor's Life Sciences/Biosciences Consortium. These recommendations are made with proposed budgets. It should be noted that coordination between the different programs is essential. Duplication of efforts and services would be counterproductive. These are specific points for opening discussions on how to implement a comprehensive program to build the life sciences community in Kentucky.

Consortium Recommendation #1: Establish a venture fund dedicated to Life Sciences.

Consortium Recommendation #2: Support current efforts to establish a "Seed Fund" targeted to early stage investing in Life Science start-ups.

Kentucky is in the bottom five percent of life science venture capital investment. Attempts have been made to form several early stage life science seed funds, but to date little progress has been made in stimulating life science enterprises.

Other states such as Oklahoma and Arkansas have set up $100 million venture capital pools that are backed by contingent tax credits. These tax credits are only to be utilized if the fund does not provide a return. Other states including Indiana and West Virginia have set up venture capital fund of funds to increase life science investment within the respective states. The concept of a fund of funds is that the money in the fund is invested as limited partners into existing venture capital funds. West Virginia created a $25 million fund of funds for life science investment three years ago. The downside is that the existing venture capital funds are not strongly incentivezed to make investments within the states that invested in their fund. West Virginia has had no investment within their state from their original fund.

A Kentucky Life Sciences Fund would be a traditional venture capital fund that would be managed and run from Kentucky. These funds would be used to incentivize companies to locate and grow their businesses in Kentucky. The funds would be backed by contingent tax credits. If successful, then the cost to the state of such a fund would be minimal. If the fund failed to provide a return, the cost to the state would be dependent upon the degree of failure of the fund. Other states have raised the funds from banks within the state.

- Create contingent tax credits* in the amount of $29 million per year over four years.
- Provide guaranteed 3% return on investment.
- Tax credits pay out 5 years after investment if the fund does not perform.

* This "contingent" tax credit would only be utilized if the fund loses money. If the fund is successful the tax credits will not be utilized.

Consortium Recommendation #3: Establish a program to attract and retain experienced life science managerial talent in Kentucky.

It has become axiomatic in the last twenty years that an entrepreneurial economy is a growth economy. Such a proposition is supported by the explosive contribution to job creation by small business and the creative capacity and innovative nature of small firms. According to a report from the *Global Entrepreneurship Monitor,* "nearly seventy (70) percent of economic growth is attributable to entrepreneurial activity." State governments in the United States engage in a fiercely competitive environment to "grow business." Consequently, "the interception of two precepts-the value of entrepreneurship to the overall economy and the impact of state actions on the business climate has significant impact for state officials and policy makers."

Kentucky's universities house innovative research. The commercialization of that research into viable products and the development of businesses to promote those products, however, have not been as promising as anticipated.

Gifted academics are likely to be more inclined toward exploring their intellectual curiosities than pursing entrepreneurial ambitions. Many may have potentially commercializable products within their laboratories but have little interest or experience in building businesses, as it diverts them from their core interest: asking and answering profound research questions. On the other hand, there are individuals who have a keen business sense, the entrepreneurial ambition, while lacking the research background and facilities they need to produce innovative prototypes that have the potential to become marketable products.

These challenges present an opportunity for innovative state policy development. State government should develop a program to bridge the divide between the researcher and the entrepreneur. It should leverage the unique strengths of each by encouraging each to remain focused on their core strengths while synergizing their individual comparative advantages into a collective mission to commercialize research. "Brains for Business" would be a program that would catalyze these synergies.

- Provide $2 million annually for seed stage capital investment.
- Provide $2 million annually for talent attraction.
- Use funds to attract experienced life science talent to Kentucky.
- Partner with national venture capital firms to develop early stage deal flow.
- Use this program as a pilot program for potential expansion into other technology sectors.

Consortium Recommendation #4: Fund and provide strategic direction for an expedited assessment of both public and private infrastructure that currently exists and that will be needed over the next decade, in order to grow Kentucky's Life Science industry base (e.g. research parks, incubators, laboratory facilities and intellectual capital).

- Provide up to $200,000 to engage an external research firm to conduct a review of existing infrastructure.

Consortium Recommendation #5: Enhance the current statewide commercialization program under the direction of the Department of Commercialization and Innovation (DCI) to more adequately address the Life Sciences disciplines.

The efforts that are currently underway at the University of Louisville and University of Kentucky to commercialize their respective life science technologies need additional support services to allow them to fully maximize their potential.

The life science industry requires highly specialized business skills to successfully implement and execute a business plan. Few single entities in the state have the current deal flow to justify a full time regulatory expert, a full time IP (Intellectual Property) attorney as well as a business development person. If these resources were pooled, many business development groups could utilize the services, resulting in a much more cost effective solution. All start-up life science companies that are located in Kentucky would have access to these services.

- Provide $750,000 a year for a life sciences commercialization program
- Provide intellectual property expertise.
- Provide regulatory expertise.
- Provide business development expertise.
- Make this expertise available to researchers at all of Kentucky's academic institutions and researchers interested in establishing companies in Kentucky.
- House staff within Economic Development Cabinet.

Consortium Recommendation #6: Review and modify regulations, policies and procedures governing the Kentucky Natural Products Fund and the Commercialization Investment Fund to assure they are market competitive, effective, commercially viable investment funds.

- Provide additional funding to the Kentucky Natural Products Fund (KNPF) to make it commercially viable.

Consortium Recommendation #7: Designate the Commissioner of DCI as the state government leadership position responsible for life sciences business attraction and retention, in partnership with the Governor's Senior Policy Advisor for Postsecondary Economic Development Initiatives, the Council on Postsecondary Education (CPE), and the life sciences experts within the universities.

Consortium Recommendation #8: Create economic development incentives that are attractive to Life Science companies – for established companies as well as prospective start-ups or early stage companies.

- Establish $100 million revenue neutral revolving loan fund to provide low interest loans to life science companies wishing to move, or expand in Kentucky.
- Allow the sale of net operating losses.
- Lower employee requirements for existing programs for life science companies.

Consortium Recommendation #9: Provide sustained support for K through 12 education, Workforce Development education (K through 12, postsecondary education), KCTCS and other institutions to develop the Life Science Workforce.

- Infuse K through 16 education with a life long learning approach that stimulates active student/learner participation in knowledge economy information, skills and strategies.
- Provide students with the opportunity for advanced and creative learning.
- Create and support alternative education models to re-educate and re-train workers.
- Develop internship program for higher education students with Kentucky-based biosciences companies.

Consortium Recommendation #10: Provide sustained financial support to Kentucky research and innovation programs that are at the interface of research and commercialization.

- Increase funding to the Kentucky Tobacco Research and Development Center.
- Provide funding to support initiatives such as MetaCyte Business Labs.

Consortium Recommendation #11: Establish an advisory group to assist the Commissioner of DCI in the implementation of the Life Sciences/Biosciences Consortium recommendations.

- Establish appropriate advisory and governing committees to oversee specific investment programs in the life/biosciences.

GOVERNOR FLETCHER'S
LIFE SCIENCES/BIOSCIENCES CONSORTIUM MEMBERS

Dr. Wendy Baldwin

Wendy Baldwin was appointed Executive Vice President for Research of the University of Kentucky, effective January 1, 2003. She graduated magna cum laude from Stetson University, Deland, Florida in 1967 with a bachelor's degree in sociology and received her master's and doctorate degrees from UK in 1970 and 1973 respectively.

In her previous position as deputy director of Extramural Research at the National Institutes of Health (NIH), she advised the director on extramural policy issues and was responsible for developing and overseeing policies and procedures for extramural research and training programs. She also worked closely with other federal agencies and private foundations to develop co-funding for strategic initiatives.

Dr. Baldwin is a member of numerous professional associations, has published dozens of papers and articles and has testified extensively before Congress on a broad range of research issues. She is a member of the board of the Human Frontier Science Program, served as a U.S. Representative to the World Health Organization and is a member of the International Advisory Committee for the Scientists for Health and Research for Development Association. Dr. Baldwin also has served on The Pew Charitable Trust, the Federal Demonstration Partnership, the National Science and Technology Council and the American Association for the Advancement of Science.

Dr. Baldwin has received numerous awards and honors including the Association of Independent Research Institutes Public Service Award, Inducted as a Fellow of American Institute for Medical and Biological Engineering, The Society for Research Administrators, Distinguished Contribution to Research Administration Award, The National Academy of Public Administration and the American Society for Public Administration National Public Service Award.

Dr. Keith W. Bird

Dr. Keith W. Bird was appointed Chancellor of the Kentucky Community and Technical College System in February 1999. He previously served as President of Central Carolina Technical College and New Hampshire Regional Community Technical College at Claremont and Nashua. He also was Deputy Commissioner of the New Hampshire Community Technical College System.

As Chancellor of KCTCS, Dr. Bird is responsible for system-wide direction of academic, student and economic development/workforce initiatives. The Chancellor's Office oversees System efforts in Distance Learning, Global Studies and Grants and Contracts.

Currently, Dr. Bird serves as Director of the Ford Foundation "Bridges to Opportunity" project which is designed to improve access and success of low-income adults by organizing workforce and education systems around long-term comprehensive career pathways that integrate academic, workforce training and development and remedial programs.

Dr. Bird received his B.A. from Alma College and his M.A. and Ph.D. from Duke University. In 1969-70, he studied as a Fulbright Scholar and Duke University Exchange Student at the Free University in Berlin, and as a fellow of the Military History Research Office in Freiburg, funded by the West German Government Academic Fellowship Program, in 1975.

Jim Clifton

Jim Clifton served as the former Associate Vice President and Executive Director of The Innovation Group. Jim joined KSTC in June 2001 as the Executive Director of The Innovation Group.

A Kentucky native, Jim's diverse management background and technology experience provide a solid understanding and foundation for his role in creating and implementing the commercialization strategies of the Kentucky Innovation Act. Jim is a software business startup executive with experience in B2B infrastructure and networking software markets. He has built business teams from concept stage to commercial stage with 100+ employees and has operational experience in all phases of business. Jim holds an MBA from Vanderbilt University and a BS from Washington and Lee University.

Dr. Maelor Davies

Dr. Davies is Director of the Kentucky Tobacco Research and Development Center (KTRDC), a state-mandated research center at the University of Kentucky (College of Agriculture). Dr. Davies received his graduate and postgraduate education at the universities of Oxford and London in the UK, respectively, followed by postdoctoral research at the Plant Research Laboratory of Michigan State University. Prior to joining KTRDC in 1996 Dr. Davies was a senior scientist with Calgene Inc., a pioneering agricultural biotechnology company in California. During his 14 years with Calgene, Dr. Davies played key roles in many of that company's research and development programs which produced some of the world's first genetically engineered crops, featuring a wide range of new characteristics of value to the farmer and the consumer, such as herbicide tolerance, improved fruit quality, and novel natural products. At KTRDC Dr. Davies has been responsible for designing and overseeing the transition of the Center from its previous focus on tobacco and health to the present mission of facilitating the development of new crops for Kentucky agriculture. Dr. Davies currently serves on the board of the Owensboro Biotechnology Alliance, and the advisory board of the Kentucky Life Sciences Organization.

Eric Davis

Eric Davis is the past president of the Greater Owensboro Chamber of Commerce and Economic Development Corporation. He served as a director on the Owensboro Biotech Alliance, a non-profit corporation with a mission to promote biotechnology initiatives in the greater Owensboro region and throughout the State of Kentucky.

Eric has 20 years experience in economic development and commercial real estate. He is a Certified Economic Developer and holds the CCIM designation as an expert in commercial investment real estate.

Alex Day

Alex is the Chief Executive Officer of Sheltowee, LLC. After receiving a B.S. in physics, Alex began his career with the pharmaceutical company Audax, Inc., as a technical liaison setting up animal studies for major pharmaceutical companies. Alex moved on to VP of Business Development where he was responsible for licensing a pharmaceutical treatment for irritable bowel syndrome and was later promoted to President of the company where he significantly increased annual revenues. Alex has substantial experience with intellectual property issues, manufacturing of dietary supplements, and new drug development. He left Audax in August of 2000 to found Sheltowee. Alex is a cofounder and President of the Kentucky Life Sciences Organization, a board member of the Kentucky Science and Technology Corporation and was appointed by the Governor of Kentucky to serve on the Kentucky Tobacco Research Board.

Steve Downey

Steve Downey serves in a number of capacities in the life sciences industry in Louisville. He is President and CEO of ApoImmune, Inc., an early-stage biotechnology company developing a therapeutic cancer vaccine for a Phase I clinical trial at Jewish Hospital. He also serves as Chief Operating Officer of MetaCyte Business Lab LLC, the life sciences and health care technology venture development subsidiary of Louisville Medical Center Development Corporation. Steve has served in a variety of executive management roles in public corporations such as Providian Corporation and Ventas. He has also been involved in several early-stage companies, including venture-backed start-ups, in both CEO and CFO capacities. Steve began his career with Ernst & Young in 1978 and worked with clients primarily in the financial services, health care and real estate industries. He left Ernst & Young and moved to Louisville in 1991 to join Providian Corporation. Steve graduated with honors from the University of Alabama with a B.S. in Accounting. He and his wife, Jane, have a daughter and a son.

Representative Jim Gooch, Jr.

Rep. Jim Gooch, of Providence, is a veteran member of the Kentucky House of Representatives serving in his sixth term as a state lawmaker. He represents Kentucky's 12th House District in Webster, Daviess, Hopkins, and McLean counties. As chairman of the House Natural Resources and Environment Committee, Rep. Gooch has significant influence over some of the most important issues confronting Kentucky.

Rep. Gooch is a co-owner of Western Kentucky Steel Construction Company, Inc, a family-owned business that his father established in 1958. He is also a district manager for Modern Woodman, a financial services company and serves as the legislative representative on the Green River Area Development District's board of directors.

Rep. Gooch became mayor of Providence when he was 30 years old and served in that position from 1982 to 1986. He later served two terms on the Providence City Council. As an active member of a number of organizations in his community, Gooch is a past president of the Ruritan Club, the Chamber of Chamber and the Providence Jaycees He has also served as treasurer and vice president of the Kentucky Jaycees. Rep. Gooch has served on the Webster County Airport Board of Directors and as vice chair of the Webster County Economic Development Corporation. In 1990, the Providence Chamber of Commerce selected Rep. Gooch as "Citizen of the Year."

Roger D. Griggs

Mr. Roger D. Griggs is a successful entrepreneur and businessman, having founded numerous businesses throughout his career, including Union Springs, LLC (investment organization), Richwood Pharmaceuticals (currently Shire Pharmaceuticals), PediaMed Pharmaceuticals, Xanodyne Pharmacal, Integrity Pharmaceuticals and DECA (Drug Enhancement Corporation of America). Mr. Griggs currently serves as Chairman of the Board for Xanodyne Pharmaceuticals and PediaMed Pharmaceuticals.

Mr. Griggs is heavily involved in the Northern Kentucky community, serving on numerous boards including the TriCounty Economic Development Board and the Northern Kentucky University Business Advisory Board among others.

John Hall

John R. Hall served as an employee of Ashland Inc. for 40 years, including 17 years as Chairman and Chief Executive Officer, before retiring in January 1997. Since his retirement, John Hall has continued to be active in the corporate world, serving as a board of director member for a number of different companies. After reaching the mandatory retirement age for CSX Corporation and Bank One Corporation, he continues to serve as a director of Humana Inc., GrafTech International, and United States Enrichment Corporation (USEC). In addition to his corporate boards, he is active in public service and education, serving as Chairman of the Board of Directors of the Blue Grass Community Foundation and Chairman of the Board of the Commonwealth Fund for KET. He also continues to serve as a Trustee of Vanderbilt University and Transylvania University.

Dr. Allyson Hughes Handley

Governor Ernie Fletcher appointed Dr. Allyson Hughes Handley as his Senior Policy Advisor for Postsecondary Economic Development in November of 2004. Previously, she was the Secretary of the Governor's Executive Cabinet. Dr. Handley earned her Bachelor of Arts degree from the University of Western Ontario and she holds masters and doctoral degrees in education from The Johns Hopkins University in Baltimore, Maryland. Prior to coming to Frankfort, she was President of Cogswell College, an engineering and arts institution located in Sunnyvale, California. She was the first woman to serve as President of Midway College, Kentucky's only women's college, from 1998-2002.

Dr. Handley has held faculty appointments at The Johns Hopkins University, National University, the University of San Diego, and McGill University in Montreal, Canada. She served as Vice President for Development and Alumni Relations as well as Dean of the School of Education and Human Services at National University.

Dr. Handley is a member of the American Association of University Women, Rotary International and International Women's Forum. While President of Midway College, Dr. Handley served as Chair of the Woodford County Chamber of Commerce Board, was a member of the National City Bank Kentucky Advisory Board, the Lexington Forum and the United Way of the Bluegrass Board of Directors. Dr. Handley has served on the Sunnyvale Chamber of Commerce Board and the Santa Clara Historical Commission as well as on the Sunnyvale School District Foundation Board. Currently, Dr. Handley serves on the Kentucky Tobacco Research Board and is Vice-Chair of the Governor's Life Sciences/Biosciences Consortium. Throughout her professional career Dr. Handley has been active in promoting advanced mathematics, science, and technology education for women.

Senator Ernie Harris

Ernie Harris of Crestwood, Kentucky was born on December 23, 1947. He earned his Bachelor of Arts in Business Administration from the University of Kentucky and a Master of Arts in Management from Webster University. Senator Harris is beef cattle and tobacco farmer and a commercial airline pilot. He was elected to public office in 1995 and currently serves on several committees. The committees include Agriculture and Natural Resources of which he is the chair and the Broadband Taskforce where he serves as co-chair. Senator Harris is retired from the U.S. Air Force (Ret., Lt. Col.), a member of the Chamber of Commerce, the Kentucky Farm Bureau, VFW Post 7891, American Legion Post 39 and the Oldham County Fair Association

Thomas R. Kerr

Representative Tom Kerr is a resident of Taylor Mill and represents the 64th District of Kentucky. He has served in the State Legislature since 1985. Currently he sits on the Tourism Development and Energy, Economic Development, and Labor and Industry committees. A native of Northern Kentucky, Representative Kerr earned his Bachelor of Business Administration from the University of Kentucky and his Jurist Doctorate from the Chase College of Law at Northern Kentucky University. Representative Kerr is a member of both the Kentucky and the Northern Kentucky Bar Associations and a member of the Northern Kentucky Bar Association Pro Bono Panel. He has served in the Air National Guard.

Bill Lear

Bill Lear is Managing Partner of Stoll, Keenon & Park, LLP and has been appointed to the Biosciences Consortium as a representative of the Management Committee of Commonwealth Seed Capital, LLC. Bill is a former Chairman of the Board of the Greater Lexington Chamber of Commerce and Lexington United, and currently serves as Vice Chair for Economic Development for Commerce Lexington. He is also a former state legislator who served as Chairman of the House Economic Development Committee and sponsored the legislation creating the Kentucky Economic Development Partnership bill. Bill holds an economics degree from Davidson College and a Juris Doctor degree from the University of Kentucky, College of Law.

Dr. Nancy C. Martin

Dr. Nancy Martin is the Senior Vice President for Research at the University of Louisville. Dr. Martin received her Ph.D. in biology from Harvard University, trained as a postdoctoral fellow at the University of Chicago in the Department of Medicine and Biochemistry, and as a Professor of Biochemistry at the University of Minnesota, University of Texas Southwestern Medical School, and the University of Louisville. She applied state of the art molecular biological techniques to make distinguished contributions in the areas of mitochondrial biogenesis, RNA enzymology and protein targeting with continuous peer reviewed funding for over twenty years. She has served as editor for international journals, referee for numerous granting agencies and has organized many national and international conferences. As Senior Vice President for Research at the University of Louisville, she established an Office of Technology Development and implemented policies and procedures supportive of technology transfer from the university to the community. In addition to serving on this commission, she serves state wide on the Kentucky Manufacturing Assistance Corporation board, the Kentucky EPSCoR Committee and the Kentucky Science and Technology Corporation board.

Billy Joe Miles

A resident of Owensboro, Billy Joe Miles graduated from Western Kentucky University in 1962 with a Bachelor of Science degree in agriculture. Mr. Miles has served on the University of Kentucky, Board of Trustees since 1995. Mr. Miles is the past President of Miles Farm Supply, LLC, a trustee of Miles Farms, LLC, and is associated with Miles LP Gas, Inc. He is the past owner of Marathon Fuels and TNT, Inc which had three television series on 65% of the U.S. market: ESPN, TNN and a syndicated show – Tuff Tracks. Mr. Miles is involved with exhibition marketing and management doing trade shows and presently marketing trade shows in Russia. Mr. Miles is currently the Chair of the Owensboro Mercy Health System, the Director of Kentucky Environmental Protective Association in the Classroom, the National Fertilizer Association Executive Committee, the Governor's Task Force on Efficiency and the Governor's

Task Force on Agriculture. Billy Joe Miles is also a Board Member of Owensboro Community College and has served 20 years on the Owensboro-Daviess County Planning and Zoning Commission. He received the 1992 Mayor's Award for Excellence and was named the 1991 Outstanding Agriculture Leader. In 1998 Billy Joe Miles was inducted into the Western Kentucky University Hall of Fame as well as the WKU Agriculture Alumni Hall of Fame.

Keith Rogers

Keith Rogers serves as Executive Director of the Governor's Office of Agricultural Policy (GOAP). GOAP administers the Kentucky Agricultural Development Fund, the Agricultural Development Board, the Kentucky Tobacco Settlement Trust Corporation (Phase II), the Governor's Commission on Family Farms, Kentucky Agricultural Finance Corporation, and the Kentucky Agricultural Resource Development Authority. Additionally, Keith serves as a direct link between the Governor and one of the Commonwealths most important industries. Before accepting Governor Fletcher's appointment, Keith served six years as District Director for Congressman Ron Lewis and as Senior Legislative Assistant for Agriculture and Natural Resources on his Washington staff from 1995 - 1997.

Robert S. Saunders

Robert Saunders is a Managing Director of Chrysalis Ventures, Kentucky's largest venture capital firm. He is Chair of the Venture Club of Louisville and is a Board Member of MetaCyte.

Bob is a graduate of Stanford University and holds Master's degrees from both the London School of Economics (LSE) and Harvard University. He is a former Marshall Scholar (LSE) and a former Fulbright Scholar (University of Stockholm, Sweden).

He began his career in 1978 with the Boston Consulting Group, was subsequently Director of Competitive Strategy Analysis at Bain & Company and founded Saunders Capital Group, Inc. a Boston-based private equity boutique in 1988 before joining Providian Capital Management in 1993. Bob joined Chrysalis in 1997 following Providian's sale to Aegon.

Senator Johnny Ray Turner

Senator Johnny Ray Turner was born in Paintsville, KY, on Dec. 19, 1949. He attended Calvary College in Letcher County before receiving his bachelor's and master's degrees in education from Morehead State University.

An educator for 28 years, Senator Turner taught at Salyersville High School in Magoffin County, McDowell Elementary and High School in Floyd County, and Johnson Central High School in Johnson County, where he also served as dean of students. In addition, Senator Turner is a long-time basketball coach, having been named the 15th Region "Coach of the Year" for his work in leading the Johnson County Golden Eagles to the regional title in 2000.

Senator Turner is the former president of the McDowell Jaycees and a member of the Kentucky Gamma SAE fraternity.

He began his service in the state Senate in 2001, representing the 29th District, including Floyd, Breathitt, Knott and Letcher counties. Senator Turner has sponsored successful legislation to expand affordable housing opportunities and give fair treatment to teachers and other school personnel for the time they work. In 2003 Senator Turner was elected to serve as Caucus Chair for the Senate Democratic Caucus.